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ABSTRACT

Vocational education in the United States has come under increased scrutiny, and its proponents need the tools to convince the critics of its merits. Many economic conditions have a strong impact on vocational education, and understanding of economics is important in offering a rationale of vocational education. In a time of shrinking revenues, vocational education is important in the educational system, as it helps make workers employable, and contributes to economic efficiency. To understand the economic rationale for vocational education, one must understand economic concepts and major economic systems. There are two major systems of allocation of scarce resources, capitalism and socialism. The United States has a system of mixed capitalism. Three resources vital for production are land, capital and labor. There is currently a worsening labor shortage, and workers will need to be recruited and developed from underused sources, such as disadvantaged and disabled populations. Vocational education can play an important role in solving the labor shortage problem by anticipating employer demand. The economic rationale for vocational education would seem to be easy to demonstrate on the basis of need for trained workers and increasing international competition. Many governmental decision makers, however, are dissatisfied with vocational education. Vocational education has had to defend itself and criteria and methods have been set up to evaluate vocational education programs. Vocational education need to improve its economic value by increasing its role in economic development. Vocational education must promote itself by informing students, communities, businesses, and government of its contributions to society. (AS)

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Getting More Bang for the Buck: Determining the Economic Rationale of Vocational Education

by
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A VES Monograph

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EXECUTIVE SUMMARY

In this time of tight budgets at all levels of government, vocational education must be able to fight for more resources from a position of strength, not one of weakness. Therefore, vocational education leaders must be able to document the positive impacts of vocational education, both economically and socially, and illustrate why resources must be allocated to vocational education, to benefit our entire society.

The purpose of this monograph is not to convince the reader about the economic merits of vocational education. The majority of the readers of this monograph are already convinced that vocational education is a sound economic investment. Instead, the purpose of this monograph is to study the economic conditions that have a strong impact on vocational education, and develop an understanding of the tools available to vocational education, to adapt to a volatile economy.

The monograph provides a brief description of the free-market economy in place in the United States. Then the monograph covers the criteria available to evaluate vocational education, in terms of efficiency and effectiveness. Various approaches for criteria measurement are also discussed, including the value-added and competency-based approaches. Finally, the monograph looks at the role vocational education currently plays in economic development, and ways vocational education administrators and planners can increase the role vocational education plays in economic development.

Again, the purpose of this monograph is not to sell the reader on the economic and social merits of vocational education. Virtually all readers of this monograph are already sold on vocational education, therefore, the purpose is to provide the tools needed to convince others (political leaders and the general public primarily) about the merits of vocational education.

GETTING MORE BANG FOR THE BUCK:
DETERMINING THE ECONOMIC RATIONALE OF VOCATIONAL EDUCATION

A VES Monograph

Governments throughout the world, at international, national, and local levels are caught in a most difficult situation. They must maintain or increase their delivery of services to the people they serve, without increasing the tax levees on their citizens. As a result, inefficient governmental delivery systems are being overhauled or eliminated to cut costs.

This situation forces the agencies that operate the delivery systems to prove that they are: (1) efficient, (2) necessary, and (3) economically feasible for the client(s), the public, and the funding body. One delivery system that has come under increased scrutiny in the United States is vocational education.

During the Reagan Administration, especially in his second term as President, proposed deep cuts in vocational education funding at the Federal level were proposed. Most of these cuts were restored by Congress, but funding for vocational education at the Federal level has remained stagnant for several years. To illustrate, overall vocational education appropriations rose by 6.3 million dollars between fiscal years 1987 and 1988, a gain of .7 percent (a loss in real dollars when adjusted for inflation).[1] This trend of little or no growth in federal funding for vocational education will probably continue, at least in the near future. One sign of this continuation is that President Bush has proposed a 10 million dollar cut in vocational education funding during fiscal year 1989.[2]

As a result, states, counties and school districts have responded to this shortfall of funds by employing three basic methods: increasing the funding of vocational education (at the expense of other programs, through tax increases, or through a combination

of both), finding alternative private sources of funding, or cutting programs, services, wages and anything else possible.

When the decision has been to make budget cuts, often these cuts have been across-the-board, with little thought given to the long-term implications of the cuts. Continued across-the-board cuts could irreparably damage the vocational education system currently in place, causing the students, employers, communities and states that depend on vocational education to suffer.

Vocational education is an important participant in the United States educational system. Its importance and influence is widespread, affecting virtually every economic and social sector in the United States. Vocational Education Planning describes the extensive role of vocational education: "Vocational education has numerous roles to play in the American culture. Not only is it expected to enhance the supply of trained manpower available to American industry, but it is also expected to operate with relative efficiency in satisfying various student needs as well as social needs."[3]

Economic efficiency, and its relevance to vocational education is described by Walter McMahon in an article in the International Review of Education. According to McMahon,

> The economic efficiency of vocation-specific and of technical applied courses in the curriculum at any given education level, whether secondary, two-year community college, first degree, Master's, or Ph.D., depends on the presence of supplementary economic returns to the vocationally oriented specialized skills. These specialized courses cost more, so the question is whether or not the returns at any given level are sufficiently above the returns to general education to justify the additional costs. If so, the social rates of return (to the extent that earnings measure the full returns) will be higher, and the degree of vocationalization in question will be cost-effective.[4]

Without sufficient access to vocational education, students would have an important education and career option eliminated. Employers would have to increase in-house training and/or hire less-skilled people. Communities that currently have vocational education facilities would lose a strong element in their economic development programs. States that drop vocational education would have a workforce that would be at a training and employability skill disadvantage, both with new labor force entrants and with current labor force participants that need to be retrained or have their job skills updated.

The goal of this monograph is to discuss methods that can be used to determine the economic rationale for vocational education. To do so, vocational education will be examined closely, studying the impact it has on its graduates, and on local, regional and state economies. Criteria will be defined and their use and utility in measuring the impact of vocational education on the graduates and economies. Special emphasis will be placed on the value-added concept, a evaluation tool by which the positive effects of vocational education on program participants is measured.

Among the criteria that will be presented are: academic performance; wages; dropout rates; training-related placement; mobility; program cost and; cost-benefit analysis. Additionally, various accountability approaches are examined. This monograph will not only establish the economic rationale for vocational education, but also give the reader optional ideas and methods, in both format and criteria, to evaluate vocational education programs.

One potential problem that must be met immediately, is the possibility that confusion could arise over the many terms used in this monograph. To help assure proper understanding and interpretation of the paper, a discussion of general economic principles, the impact of these principles on vocational education, and the impact of vocational education on the economy will be addressed.

ECONOMICS, WHAT IS IT?

One way to attempt to understand economics is to find a definition of economics. One textbook definition of economics is: "Economics is concerned with the way resources are allocated among alternative uses to satisfy human wants."[5] Another textbook defines economics as: "the study of how individuals and societies, experiencing limitless wants, choose to allocate scarce resources to satisfy their wants."[6] Other textbooks offer similar definitions, with the common thread being resource allocation to meet human wants or demands.

In their book Economics, Ekelund and Tollison view economics as the "study of human behavior in relation to three basic questions: What goods and services are produced? How are goods and services produced? For whom are goods and services produced?"[7]

Ekelund and Tollison's Three Economic Questions:

1. What goods and services to produce?
2. How are goods and services produced?
3. For whom are goods and services produced?

Given this definition of economics, then what is the effect of economics on education? Cohn, in The Economics of Education, illustrates;

> the study of how men and society choose, with or without the use of money, to employ scarce productive resources to produce various types of training, the development of knowledge, skill, mind, character, and so forth-especially by formal schooling-over time and to distribute them, now and in the future, among various people and groups in society. In essence, then, the economics of education is concerned with (1) the process by which education is produced;

> (2) the distribution of education among competing groups and individuals; and (3) questions regarding how much should be spent by society (or any of its component individuals) on educational activities, and what types of educational activities should be selected.[8]

Vocational education presents choices for the students, businesses, communities, and states involved. Students must choose whether the investment of time and money is worth the potential gain that vocational education can provide, whether the student is preparing for a first career, or changing careers. Businesses must decide whether vocational education can be used as an alternative to internal training, and whether some type of partnership (i.e., apprenticeship, classroom and on-the-job training, financial support, shared facilities and staff, etc.) would be beneficial to the short- and long-range goals of the firm. Communities and states must decide how to use vocational education facilities and programs for attracting or keeping firms, and training and retraining the labor force.

THE ECONOMIC PROBLEM

The choices that must be made, and the fact that there are limited resources and unlimited demand, on a societal level, creates what the Economist Robert Heilbroner calls "The Economic Problem," referring to "the problem of how societies forge and maintain the bonds which guarantee their material survival."[9]

This situation exists because there is a scarcity of goods. As a result, demand is not met, and society must develop a method to meet demand in order to prevent anarchy. Heilbroner writes that in order to maintain stability, society must find the solution to two needs:

1. Organizing a system for producing the goods and services it needs for its own perpetuation.

2. Arranging a distribution of the fruits of its production among its own members, so that more production can take place.[10]

The problem for vocational education is that it must prove, in a time of shrinking supply (revenues from traditional sources), that demand for vocational education is still strong, demand not only from the students, but from businesses, communities, and citizens not directly linked to vocational education.

One concept that is key to achieving an understanding of the economic rationale for vocational education is scarcity. Scarcity, in a strict economic sense means a "limitation of the amount of resources available to individuals and societies relative to their desires for the products that resources produce."[11]

To demonstrate the importance of vocational education, especially in this time of scarce labor supply, is to illustrate the role vocational education currently plays in the development or redevelopment of underused human resources. Vocational education has played a vital role in the preparation of people for careers (through both youth training and adult retraining), a role that must be expanded to meet the needs of students, employers and governments.

Scarcity is the cause of all economic decisions. If every demand was met, there would be no economic problem, nor need to make economic decisions. Since this is not utopia, scarcity is with us, and will remain with us for the foreseeable future. There

are two classifications for scarce resources, human and nonhuman resources.[12]

Human resources are labor, from unskilled to highly skilled, from managerial to entrepreneurial. All people performing work, being trained to perform work, or physically able to work but are unable to find employment are human resources. Nonhuman resources refers to all other resources including capital and natural resources. The table below shows the two types of resources.

Ekelund and Tollison Table of Economic Resources

Human Resources	Nonhuman Resources
Labor, including entrepreneurship and management	Land
	Natural resources, including minerals and water
	Capital
	Technology
	Time

There are two resources that have the largest impact on vocational education, capital and labor. The limited supply of capital helps define vocational education, by putting barriers on the coverage of vocational education systems and programs. With unlimited capital, everyone that desired to participate in vocational education programs could do so. With limited capital, systems, programs and facilities are limited, which restricts the numbers of people impacted by vocational education.

The scarcity of labor, at least the scarcity of labor in specific occupational and geographic areas, has many specific impacts on vocational education, including: choice of training programs, by both school and students; and planning, both short- and long-term, for future vocational education needs and demands. The

scarcity of labor will be discussed more fully later in the monograph.

No matter what economic decision is made, due to scarcity, there is a cost for that decision. The economic term for this is opportunity cost. As discussed by Heilbroner and Galbraith, opportunity cost involves: "The wealth or enjoyments that cannot be obtained because resources or inputs are already committed to a given purpose. All economic activities entail opportunity cost. Every act of consumption or production rules out the possibility of some alternative action."[13]

Individuals face opportunity costs every day. Choices such as either getting ahead on the bills, or taking a vacation; or choosing a career for enjoyment, even though it is not high paying are examples of opportunity costs for individuals. The cost is what you gave up to obtain a good or service.

Opportunity costs are not simply a one to one trade-off. For example, since the United States Government has deemed it necessary to spend billions of dollars for the defense of the country, monies that could have gone for education, housing, transportation, health services, or many other areas, is spent on defense.

Education involves opportunity costs at all government levels, for schools, students and the private sector. To illustrate some of the opportunity costs for education, let's examine education funding. Education funding, more specifically governmental funding of public schools, comes from three main sources: federal, state, and local governments.

Economic decisions are made at each level with significant opportunity costs for every economic decision. For example, under the Reagan administration, the combination of "new federalism," in which Federal Government input and power is reverted to state governments, no real growth in education spending, and a push by then Education Secretary William Bennett for increased emphasis on the "basics" led to a de-emphasis on non-traditional and extracurricular programs, including vocational education.

As a result of this de-emphasis, both monetarily and programmatically, states were faced with a limited number of options. The states could: follow the lead of the Federal Government and de-emphasize vocational education in their states (both monetarily and programmatically); increase revenues through taxes, at the state and local levels, to support vocational education at current or advanced levels; reappropriate funds for other programs to be used for vocational education; force vocational education programs (at the state and local level) to

maintain current program levels but become more cost-efficient; or some combination of the above options.

Each of these options have significant opportunity costs, such as: additional monies spent could go to other programs; taxpayers could be upset by tax increases; vital programs could be eliminated or critically reduced; to name but a few. The same decisions then must be made on the local level: can a local school district afford (economically and politically) a bond issue; additional monies spent could go to other programs; and vital programs could be eliminated or critically reduced. Clearly, opportunity costs play a vital role in all economic decisions, and these costs must always be considered in vocational education planning and budgetary decisions.

Another important economic concept to consider, in regard to its impact on vocational education is supply and demand. Hodgetts and Smart define supply as "the amount of a good or service that people or businesses are willing to provide at a particular price." They define demand as "the amount of a good or service that people or businesses are willing to buy at a particular price."[14]

SUPPLY: The amount of a good or service that people or businesses are willing to provide at a particular price.

DEMAND: The amount of a good or service that people or businesses are willing to buy at a particular price.

Heilbroner and Galbraith point out one fundamental, yet misunderstood assumption about demand:

> it is very important to understand that when we speak of demand..., we do not refer to a single purchase at a given price. Demand in its proper economic sense refers to the various quantities of goods or services that we are willing and able to buy at different prices at a given time.[15]

As a general rule, as demand for a good or service increases, the good becomes more scarce, and in turn more valuable. As a

result, the producer(s) of that good or service has incentive to produce more of the good or service to meet the demand. However, if too much of the good or service is produced, the product becomes less scarce, and its value decreases.

In the definitions of economics discussed earlier, one common point in the definitions was the allocation of scarce resources. Among the various nations of the world, especially the "developed nations," two societal allocation or economic distribution systems are employed, capitalism (or the free enterprise system) and socialism. Having said this, no nation currently employs either "pure" capitalism or socialism. Instead, all use a modified form, of one or the other, the modifications designed to better answer the needs of the nation, or the government overseeing the economic system.

For example, the United States professes to employ the capitalist or free enterprise system. First, it is difficult to find economists that can reach a consensus on the definition of capitalism. Hodgetts and Smart define capitalism as: "An economic system in which individuals are basically free from government control in determining all kinds of goods and services that will be produced and distributed."[16] Heilbroner and Galbraith define capitalism as: "An economic system oriented toward the accumulation of capital (or generalized, abstract wealth), coordinated by a market system in which land, labor, and capital have become 'factors of production.'"[17]

An especially interesting definition of capitalism comes from Ekelund and Tollison. The authors readily admit that there are no examples of "pure capitalism" (or "pure socialism") in the world. As a result the authors offer definitions for "pure" and "mixed" capitalism and socialism. Their definition of pure capitalism is: "An economic system in which all resources are owned and all relevant decisions are made by private individuals; the role of the state in such an idealized system is minimal or nonexistent."[18] Mixed Capitalism is defined as: "An economic system in which most economic activities take place in a private sector but in which government also plays a substantial economic and regulatory role."[19]

The United States uses a type of economic system that falls under the mixed capitalism definition. Due to the utilization of this system, such concepts as supply and demand are vital to economic decision-making, far more than in a socialistic economic system. For in a mixed capitalism economy, even though there is some degree of governmental influence on the economy, decisions on production of goods and services are largely determined by the success or failure of the good or service in the marketplace. With governmental influence limited to subsidies to manufacturers, tariffs and taxes, and price controls, the

influence government has on a mixed capitalistic market is limited.

Indeed, under a mixed capitalistic system, the private sector has a large amount of input into governmental economic decisions regarding how capital is distributed by the various governmental institutions. Significant impacts of private sector input on education include: demanding more efficient and cost efficient education programs; the increased demand for effective schools, schools that produce students who are ready to enter the workforce and society becoming productive members.

Under a socialistic system, the private sector has virtually no say in the economy. Complete economic control is exercised by the government, and the implementation of a central plan is used to arrange distribution of goods and services to the people. Rather than allow the demand of goods and services to establish production and price, a socialist government, through its central plan, decides what goods and services are to be produced, and how they are to be distributed.

THE ECONOMIC SYSTEM

Identifying the United States economic system as a mixed capitalism system, does not provide an understanding as to the economic ramifications this system has on education in general, and vocational education specifically. To more fully understand its impact, a more thorough discussion of the model of capitalism utilized in the United States is in order.

One common misunderstanding in the United States is that the free-enterprise system is mandated by law, the Constitution, or a document somewhere. This is simply not the case, instead our economic system has developed over the entire course of the history of the United States, and in fact is still developing and changing. The economic system has experienced significant changes in the 200-plus year history of the United States.

The economic system of the United States could have developed into a socialistic system, in fact, the economic systems of many democratic Western European Nations have incorporated various tenants of socialism into their economic systems including: government-owned industries, national health care (insurance), and large re-distribution of wealth efforts through high tax rates. However, our system developed into one that is much closer to pure capitalism than pure socialism.

As a result, governmental decisions on many policy issues are affected by economic conditions. The government has limited control over the economy in a mixed capitalism system, and decisions are often based on economic conditions. This has had a significant impact on education programs, including vocational education programs.

The impacts can be seen in various forms including: cyclical cuts or increases in education funding, depending on the current economic climate locally, statewide, and nationally and; shaping the programs with specific emphases (recent attempts at this include: back to basics, increase in science education, geography, etc.), designed to make the students more competitive with students from other cities and towns, states, and countries.

Governmental controls (primarily at the Federal level, but also at the state and local levels) over the economic system have increased, especially during and following the Great Depression. Heilbroner and Galbraith devised a table detailing the increase in governmental control during the twentieth century, and the reasons behind the increase in governmental controls.

Heilbroner and Galbraith's Reasons for Government Growth

1. **The Growing Size of Business Evoked a Need for Government Supervision.** As business increased in size, the social impact of its activities steadily widened. Building or not building a plant came to spell prosperity or decline for a town, even for a state. Cutthroat competition came to mean ruin for an industry.

2. **Technology Brought a Need for Public Supervision.** Much of the long-term growth of government stems from the impact of technology. Examples: As the automobile came to be a commonplace object, it created a need for traffic authorities to deal with it - some ten percent of state and local government employment exists to deal with the automobile. ...we have the same effect from atomic energy, new drugs, space, and weaponry.

3. **Urbanization Increased the Need for Government.** City life has its appeals, but it also has its perils. People cannot live in crowded quarters without police, public health far more complex than those needed in a rural setting. Government has always been a urban phenomenon, and as every nation has urbanized, its reach of government has increased.

4. **Unification of the Economy Gave Rise to Additional Problems.** Industrialization knits an economy together into a kind of vast, interlocked machinery. Problems can no longer be localized. The difficulties of the economy grow in extent: there is a need for a national, not a local energy program, for national transportation, urban and educational programs. Government ...is the principal means by which such problems have been handled.

5. **Economic Malfunction Brought Public Intervention.** Fifty or seventy-five years ago, ...people felt that the economy was best left alone. That attitude changed with the advent of the Great Depression. In the ensuing collapse, the role of government greatly enlarged, to restore the economy to working order. The trauma of the Depression and the determination to prevent its recurrence were a watershed in the trend of government spending and government intervention.

6. **A New Philosophy of "Entitlement" Replace the Older One of "Rugged Individualism."** We no longer live in a society in which old-age retirement, medical expenses, and income during periods of unemployment are felt to be properly the sole responsibility of the individuals concerned.[20]

THE ECONOMIC SYSTEM IN THE UNITED STATES

As a mixed capitalistic economic system, the United States economic system can also be classified as a market system. A market system is defined by Heilbroner and Galbraith as: "The structure of exchange relations of buying and selling that sustains the economic process of capitalism."[21] Hodgetts and Smart use the term market economy, and define it as: "An economy in which producers and consumers, through a system of markets and prices, make the decisions about the use of economic resources."[22]

To better explain the dynamics of a market system, economists often use the principle of circular flow to illustrate how a market economy works. The following diagram is of a circular flow market model, showing the interaction between producers and consumers, for the benefit of both.

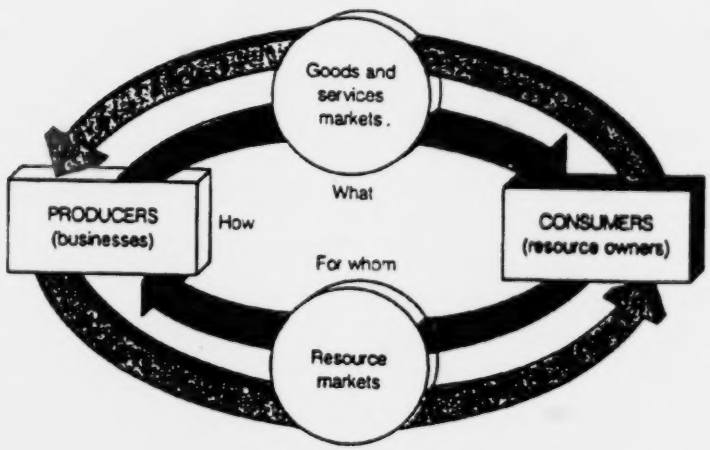

Diagram from Economics and Making Decisions, Kourilsky, et al: West Publishing Co., St. Paul: (1988), page 38.

As illustrated, producers hire consumers and pay them for their labor. Consumers then buy the goods and services from the producers, paying for the goods with the wages earned from their labors. In turn, the producers use that income to produce more goods and services.

This diagram represents the dynamics of a market economy in its simplest and most pure form. This type of interaction does not happen, even in a pure capitalistic economy, for one primary reason; producers produce goods and services to make a profit, not to produce the exact amount, at the exact price to break even. This diagram does not consider taxes and other non-production, non-consumer costs and/or benefits. The diagram does illustrate the primary dynamic of the market system, with the producers and consumers being the primary players, and government being a secondary player.

To better facilitate the interaction between producers and consumers, money has been developed as a common measure of trade. Rather than barter for the exchange of goods and services, as was the common practice in pre-market economies, prices can be set, using money as the measure for exchange. Money, in and of itself has little real value (generally the cost of production for money is very small), its value coming from the fact that it is used as: "a generally accepted medium of exchange."[23]

The roles of the consumer in a market economy are pretty straightforward, purchase and use goods and services for their own consumption. The role of the producer is more complex and deserves some analysis, especially regarding its impact on vocational education.

In order to produce goods and services, producers must obtain the necessary economic resources to produce the goods or services desired (see page 7 for a list of economic resources). Three primary resources, vital for production are: land, capital, and labor.

Land, which in this discussion incorporates all natural resources, is vital to produce any good or service. Examples of the various needs for land include: steel producers need land (especially iron ore) to produce finished steel, farmers need land to produce crops, utility producers need land to provide water, sun, wind, natural gas, and other fuels to produce usable power, and coal producers need land to supply the coal to mine. No product can be produced without land.

Capital refers to more than just money, at least regarding production. In addition to money, capital refers to: "...machinery, equipment, and any other physical labor-saving devices that will help people do a job better or faster."[24] Capital covers the non-natural resource, non-labor aspect of production. The automobile is a prime example of a capital intensive industry. Since the development of the assembly line method of production by Henry Ford, the automobile industry has increasingly used machinery and robotics to decrease the amount of production time and personhours involved in producing cars.

Labor refers to the people available to produce goods and services. This includes all people currently working, all people that are unemployed (whether or not people are looking for work, as long as they are physically and mentally able to work, they are considered labor), all people in training programs to upgrade current skills or learn new skills, as well as all young students that could work as opposed to going to school.

The training and/or retraining of the workforce is the vital role that vocational education plays in labor. To be able to do this, vocational education must be responsive to the needs and desires of the students (and trainees), businesses, and communities it serves. Being responsive requires a joint effort of all involved in vocational education: teachers, administrators, government, peripheral agencies and organizations, as well as students, businesses, and the public.

Communication between all parties is vital. In order to have effective programs, vocational education programs must be timely, educational, and provide instruction in skills and knowledge demanded by the students, businesses and the public, the recipients of the vocational education benefits. Similarly, the recipients must make the effort to work with vocational education, to insure that their skills and knowledge are used by vocational education to design and implement programs that benefit as many people as possible, in the most effective and efficient means possible.

In the United States, employers and government are concerned about a shortfall of labor, both now and in the coming years, due to declines in young workers and fewer workers over age 25 entering the workforce for the first time. Absolute numbers of young workers will decline by almost 5 million people by the year 2000.[25], and current employment participation rates (employment as a percent of the civilian working-age population) are near the highest levels among democratic industrial nations over the last 10 years, meaning that there are a limited number of people over age 25 that are not in the workforce.[26] Additionally, unemployment rates are at or near 10 to 20 year lows, causing additional shortages of workers. As a result, productive workers will have to be recruited and developed from underused sources, especially the disadvantaged and handicapped segments of the population.

The disadvantaged and handicapped populations will require special training in order to become productive workers. Vocational education must be able to meet the needs of the disadvantaged and handicapped populations, as well as the needs of the employers and the communities to maintain and expand its role in the education and training systems.

Business has several options to counteract a labor shortage. First, current employees could be asked to expand their duties. This would include the employees working longer hours, taking on additional responsibilities, and cutting back on time taken for vacations. Second, the employer could change the good or service produced, developing a less labor intensive good or service. Third, the employer could change the production mix by using more robotics and other mechanical means to produce the goods or services. Fourth, the employer could break-down (simplify) the production process, making the individual tasks performed less complex, which allows the firm to hire more under-skilled labor to do the work that skilled workers would do, if they were available.

Ideally, business as a rule would prefer to not employ any of these options. Business would prefer that there were a sufficient number of qualified (already trained, with sufficient skill levels) people available for business to hire. This ideal does not presently exist, as firms are scrambling to fill positions, especially those positions that require education and/or training beyond high school. Vocational education does play a vital role in training, but must expand its role to prove its value to more people.

One tool that vocational education uses to attempt to anticipate employer demand is labor market information. Labor market information includes: employment estimates, unemployment estimates and rates; occupational projections; and other employment and occupational information. This information is coordinated and tabulated by the U.S. Department of Labor's Bureau of Labor Statistics, with state governments used to survey businesses and tabulate state employment data.

The employment estimates cover nonagricultural industries, and are produced monthly. According to explanatory notes from the Indiana Department of Employment and Training Services (IDETS): "Employment estimates for nonagricultural industries are derived from monthly surveys of over 6,000 employing establishments and include all full-time and part-time wage and salaried workers who worked or received pay for the pay period including the 12th of the month."[27] Additionally, estimates can be revised if additional information is obtained in the following month, or when new benchmarks are developed.[28]

The reliability of the employment estimates depends on the scope of the estimate. On a national or state basis, the estimates are very accurate, especially when updated due to benchmark development. The benchmark figures are based on quarterly surveys of virtually every nonagricultural employer in the state. The benchmark process is not timely, therefore its strongest value is as a buttress for the monthly survey. The estimates are less reliable when smaller cities and towns are involved. This

is due to the lack of people in the survey. In any survey, the fewer respondents, the less reliable the survey will be, due to the extremely flawed results that any sampling error can cause.

The other resource produced through the auspices of the Bureau of Labor Statistics that is most often referenced by vocational education planners is occupational projections. The projections are developed through a process that determines industry employment by region and the relationship of industry employment for a region to that of the state and the nation. This industry relationship is cross-referenced against the Occupational Employment Statistics (OES) surveys, to determine staffing patterns for industries for the base year.

The matrix developed through this cross-referencing is matched against an estimate of what the national economy will be like for the period from the base year to the estimate year. The U.S. Bureau of Labor Statistics offers three economic scenarios for states to choose from when making estimates. Indiana has chosen the moderate economic growth scenario for its estimates.[29]

Regarding the accuracy of the occupational projection, according to Indiana's 1980 - 1990 Occupational Projections, "The reliability of the industry and occupational projections rests with how closely this economic projection equates to what ultimately becomes economic reality. Any changes, such as a higher inflationary rate or a lower GNP growth rate, will affect industry and occupational projections. It should also be noted that other factors; such as war, severe recession, or even the unforeseen relocation of a major firm to another state, would also affect Indiana's projections. Therefore, the user should always incorporate other economic and labor market information when analyzing projections."[30]

The projections are often misunderstood and misused by vocational administrators throughout the country. The estimates are treated as the demand for particular occupation, rather than what they really are, estimates based on past labor market performance of the various occupations (historical demand), and assumed future economic conditions for the labor market.

While the employment estimates and occupational projections are tools that should be utilized, they should not be used as the sole criterion for planning or evaluating vocational education programs. First, the warning above about incorporating other information into projection analysis. Second, some economists and educators are uncertain as to the accuracy of the projections, especially over extended periods of time (over three years).

The following quote from Mark Blaug, a respected economist in the field of educational planning conveys his reservations over the projections:

> ...the period over which we can usefully forecast... manpower in the present state of knowledge is limited much more than is usually admitted. All the evidence shows that we do not yet know how to forecast beyond three or four years with anything remotely resembling the 10 percent margin of errors that are regarded as just tolerable in general economic forecasting.[31]

Another issue to consider, when using employment estimates and occupational forecasting, is why are there so many jobs currently open in a particular field? Just because there are many current openings and more expected in the future, there may be reasons outside the realm and responsibility of vocational education. For example, a specific occupation may not offer a competitive wage, there may be health and safety reasons for the high number of positions available, the occupations available may be low-skill positions, which would require little or no training to perform. Still, the various projections offered by the government, do provide a tool that can be used effectively, in combination with other tools, to help with vocational education planning.

The labor information provided by the government is not the only impact government has on the economy, in fact, it may not even be the most significant impact. Other impacts include: purchasing of goods and services, employment, income redistribution, and market control and regulatory agencies and devices.

The United States Government and state and local governments combine to spend billions of dollars annually on purchases. In 1984, these purchases totaled $747 billion, with the federal government share being $295 million (of which $222 billion was for national defense purchases). This total accounted for 20.4% of the United States Gross National Product (GNP) for 1984.[32] Clearly government spending has a significant impact on the economy, and Presidents have used government spending and purchasing to help accomplish various economic goals. For example, Franklin Roosevelt used increased spending to facilitate money flow in the economy, which helped spur the economy out of the Great Depression. Conversely, Ronald Reagan cut back on spending (or at least on spending growth) to lessen the money flow, in order to reduce inflation in the economy.

Government employment, another aspect of government spending, is also a vital segment of the economy in which government, especially the federal government (state and local government, despite the fact that it is larger than the federal government in

purchasing and employment, is too fragmented to have the same impact as federal spending) can use to help control the economy. In 1984, over 16 million people were employed by government, nearly 3 million by the federal government. Employment figures listed are for civilian employment, members of the various armed service branches are not included, but civilian military employment is included. This employment led to a payroll of approximately $27 billion dollars for all governments, over $7 billion dollars for the federal government.[33]

Governments at all levels also implement some type of income redistribution, to help provide financial assistance to those who need it. This redistribution comes in many forms including: progressive taxes (primarily income tax); welfare and other types of income supplements; education subsidies; and subsidized housing, to name a few.

One final area of government in the economy is the market controls and regulatory duties designed to impact either specific industries or have a specific impact on a segment of the economy. Beginning with the Interstate Commerce Commission (ICC), which was established in 1887,[34] various regulatory agencies have been set up to oversee specific industries, in order to protect the public interest.

Over the years, many regulatory agencies have been formed to serve the public. Among these are: the Federal Communications Commission (FCC), the Securities and Exchange Commission (SEC), the Federal Trade Commission (FTC), and the Food and Drug Administration (FDA). Also there are agencies that have a different agenda, designed to protect the public interest concerning a specific issue that concerns a vast scope of industries. Examples include: the Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA).

While these agencies are not directly used to influence the course of the economy, indirectly they can have a significant impact on the economy, some agencies more than others, depending on the importance and backing given to an agency by the President and Congress. The indirect influences include: Regulating stock and bond trading to ensure that the public is protected from insider trading and other unfair disadvantages, by doing so, this allows stock and bond transactions to be handled in an open market system; and regulating pollution and safety issues to make the country as safe as possible, even if measures required by the regulators increases the cost of production. The impact of the many regulatory agencies can be strong indeed, and can have a significant impact on the economy.

Finally, Congress and the President can take measures that can have a significant impact on the economy. A prime example of this is the Economic Stabilization Act of 1970. President Nixon

used the act to put freezes on wages, prices and rents. The freezes were used as a four part policy, the first part freezing all wages and prices for 90 days. After this expired, the second part allowed wage increases up to 5.5 percent and price increases to cover increased costs. The third part loosened some of the controls and attempted to establish self-enforcement of the wage and price freeze. The fourth part called for gradual removal of the freezes. All the freezes expired by April, 1984.[35]

Still, while government does have some influence in the economy, its influence is limited by a combination of laws and tradition. The United States has traditionally been a strong capitalistic nation, and increased governmental input into the economy has occurred only during or after a significant occurrence (recession, depression, and war being the primary occurrences) that significantly affected millions of Americans.

The economic principles discussed have a significant impact on vocational education. They help to shape the programs, funding, goals and staffing patterns of vocational education. Planning and evaluating programs for vocational education must take into account economic factors and conditions, especially when developing criteria for planning and/or evaluation.

CRITERIA AVAILABLE FOR EVALUATING AND PLANNING VOCATIONAL EDUCATION PROGRAMS

At first glance, it would appear that establishing the economic rationale for vocational education should be easy. The United States needs trained workers so that business and industry can compete with foreign firms. Certainly the international competition is real. In the book The Next American Frontier, the author points out that since 1980, over 70 percent of the goods produced in the United States were in direct competition with foreign goods.[36] To make matters worse the book points out:

> since 1963, America's share of the world market has declined in a number of important areas: automobiles, by almost one third; industrial machinery, by 33 percent; agricultural machinery, by 40 percent; telecommunications machinery, by 50 percent; metal-work machinery, by 55 percent.[37]

On the issue of international competition alone, it would appear that a system that is capable of providing needed training to develop the skilled laborforce needed to compete, such as vocational education, would be able to prove its economic rationale. Vocational education, especially in theory can certainly help develop a skilled workforce. The "economic promise of vocational education," according to James Catterall, states the value of vocational education clearly:

> ...vocational education is intended to affect, in positive ways, the relationship between the individual and the world of work. This is accomplished through teaching specific job-related skills, which can then be marketed in the workplace, and by fostering positive work attitudes and behaviors - such as pride in accomplishment and the ability to give and follow directions - which may add to the marketability of graduates. For the student, the economic benefits of vocational education are supposed to accrue in the form of (a) employment, per se, verses unemployment; and (b) employment in a skilled job verses employment in a dead-end, minimum-wage job. The private economic benefits of vocational education are usually couched in terms of higher annual earnings for graduates due to the increased likelihood of their finding jobs once they have finished their formal schooling and the increased likelihood

> of their working in better jobs. In addition to these private benefits, vocational education promises benefits to society as well, in the form of a more productive workforce and a more responsible and well-behaved citizenry.[38]

Many are convinced that vocational education has not lived up to its promise, and as a result, has fallen into disfavor among some government decision makers, at the federal, state and local levels. Also, the educational reform movements of the 1980's have been concentrated on academic issues, maintaining that the country is less competitive economically because the academic education taught in the schools is inadequate. As a result of this attitude, many non-academic programs, including vocational education have been de-emphasized throughout the country. This reality has led to funding and program cutbacks, in turn causing vocational education to defend itself.

In the book Vocational Education Planning, by Young, Clive and Miles, the authors discuss the available criteria for prioritizing vocational education programs and outcomes for planning and evaluation. Listed are 13 criteria that should be considered for planning and evaluation purposes. The criteria are: "academic performance, wages or income, job satisfaction, programmatic dropout rates, student interest, net training-related job openings, training-related placement rate, occupational criticality, potential mobility, entry requirements, effectiveness in serving the disadvantaged, program cost, and benefit-cost analysis."[39]

Although written in 1972, the criteria listed are still valid and timely, and must be examined and considered, especially when considering the economic justification for vocational education. Critics of vocational education often use some of the criteria listed to illustrate the inadequacies of vocational education. To better understand what is meant by each of these criteria, a brief explanation and demonstration of the utility of each criterion is needed.

Academic performance refers to more than grade point average comparisons between vocational education students, and general education and college prep students. It refers to vocational education students demonstrating increased knowledge of academic subject matter (primarily math, english, and science). This improvement could be measured through the use of standardized tests that are currently available.[40]

The improvement of academic skills (especially the "basic skills" is something that is increasingly demanded by employers, and the combination of strong vocational skills and academic skills certainly makes the graduates of vocational education programs

more desirable for employers. A survey of over 6,000 businesses, conducted by the Committee for Economic Development (CED), showed that employers, when seeking entry-level employees, wanted people with: "...a high level of literacy, responsible attitudes toward work, the ability to communicate in English, and the capacity to learn." Specific vocational skills were considered "less crucial."[41]

Wages or income refers to the compensation received by an employer for work performed by the employee. Wages refers to the hourly rate obtained by the employee, income refers to all monies received, including unemployment compensation and income from a second job. The use of wages and/or income is a traditional measure of the effectiveness of vocational education, and can play a significant role in planning and evaluation.

Wage information, by itself has some use, but combined with employment projection data can be of significant use, especially for planning. If employment projection data shows that retail clerks will be in short supply during the next ten years, should vocational education develop specific programs to train students to become retail clerks? Wage information shows that vocational education should not use valuable resources training people to be retail clerks because the positions available are low paying, and that is the primary reason the shortage of clerks exists. More detailed wage information would also show that benefit packages for retail clerks (insurance, holidays, vacations, etc.) are below average, and therefore are not an inducement to employment.

Of course additional information would show that retail clerks require a minimal amount of training, usually performed by the employer, however, the point is that wage information is a valuable tool to use for planning and evaluating vocational education programs, especially in conjunction with other criteria.

Two recent projects have developed formulas to evaluate the economic impact of vocational education programs, in large part through the use of wage information. The first project, by Navaratnam and Hillison, attempts to develop a cost-benefit analysis model that employs the elements of costs, process and benefits. The second project, by Palomba, attempts to develop an evaluation procedure that estimates the economic impact of vocational education programs.

Navaratnam and Hillison surveyed covered secondary vocational education programs only, and four program areas were surveyed: trade and industrial (T&I), occupational home economics (OHE), business education (BUS), and marketing and distributive education (MDE). Their findings indicated that three of the programs (T&I, BUS, and MDE), showed greater economic benefit

than program cost. Only OHE showed greater cost than economic benefit.[42]

A caveat to consider when examining the Navaratnam and Hillison study is that they use the federal minimum wage as a yardstick to measure vocational education benefits to graduates. Their reasoning was that "any worker, regardless of training background, could make that amount in salary."[43] While the premise is true, the federal minimum wage ($3.35 per hour) does not reflect the economic reality of many areas, where the lowest wage paid is up to $2.00 above the minimum wage.

Palomba's approach is similar to methods used to project future earnings in wrongful injury and death cases. The approach used is a wages and hours worked before and after training, divided by program cost approach, which is an economic benefit/cost ratio. The formula controls for an earnings increase through an increase in hours only to ensure that the training truly has a positive wage effect and not simply increased earnings due to increased hours.

To be effective, a training program must raise the wages of the graduate. This increase in wages, according to Palomba, means that:

> the individual is now more skilled and can enter a new occupation leaving his/her old job behind, to be taken by a less skilled individual. In the maximum case, a positive wage effect means not only the trained individual gets a better paying job, but some unemployed person gets the trained individual's old job. This will make the economic benefit to society the entire earnings of the trained individual.[44]

For more accurate information, the study uses wage estimates for specific occupations provided by the Indiana Employment Security Division. This method provides a more accurate benchmark than the minimum wage assumption of the Navaratnam and Hillison study. The system was designed for use on a small scale, and examples of implementation are small job specific programs, rather than large scale programs.

Employing either method will give the user a tool to use to measure cost-effectiveness of programs. Again, caution must be used, and no one method should be used for all planning and evaluation, instead a combination of evaluation and/or planning tools should be utilized.

Job satisfaction is a common sense approach to program evaluation and planning. If graduates are not satisfied with the jobs landed as

a result of their training, there could be several reasons for this dissatisfaction, including: the program may be geared towards an unsatisfactory career and, the training is not sufficient to assure growth and promotion in the occupation.

Measuring the level of job satisfaction can be accomplished through follow-up surveys. The goal should be to find the level of job dissatisfaction among graduates, specify the specific areas of dissatisfaction, and determine if the problem can be remedied through program adjustments, or cancellation of the program.

Programmatic dropout rates refers to those students who leave the vocational education program, and in the case of secondary vocational education, those students who drop out of school before graduating from high school. The various program planners must make the effort to find out why the students are dropping out and what must be done to prevent future dropouts as well as luring dropouts back to the program. Simply determining the dropout rate is not enough, because the rate alone tells nothing about the program. According to Young, et al.:

> A high programmatic dropout rate may reflect either a very good or a very bad program. A bad program, of course, may cause dropouts through loss of interest. A very good program, on the other hand, may cause dropouts because a sufficient amount of training has been provided to enable them to obtain satisfactory jobs without their high school diploma or completion of the entire vocational education program. Follow-up data on the dropouts would provide strong evidence on whether or not they dropped out as a result of a very effective program.[45]

After determining what adjustments to the programs are necessary to reduce the programmatic dropout rate, ensuring that dropouts have the opportunity to return to the program is vital. Noncompleters cannot be forgotten, instead, they must be encouraged to return to complete the program, and/or finish school.

Student interest in a program is another useful tool for both evaluating and planning. If there is little or no student interest in a program, the economic justification for maintaining the program is difficult to demonstrate. According to Young et al., if the only vocational education option available to students is participation in uninteresting programs (due to lack of availability of other vocational education programs), three negative results may occur:

1. Dropout rates among students increase,

2. Lackluster student performance in the curricula in which they are enrolled, and

3. Failure to acquire the related academic skills which can lead to high potential occupational and geographic mobility.[46]

Using program enrollment totals is not an effective measure of student interest because, if students have limited vocational education choices, they may simply choose the program that is the least offensive. Instead, communication between students, teachers, and administrators is needed to best appreciate student interest in a program. Additionally, various student interest surveys, including those designed specifically for vocational education students are available. The surveys are useful tools to measure the level of student interest in a program.

Student interest in a program can be improved if labor market and employment information is made available. If a good career is available, and more easily obtainable as a result of completion of a vocational education program, the interest of a student in the program could increase significantly. A 1968 study of employment service operations found that people, especially African-americans that were well informed regarding labor market information had greater success in finding jobs than uninformed people. According to the study:

> Negro recipients of supplemental information were significantly more successful in finding jobs during the eight-week period than were Negro participants in the control group. The same estimated relationship among the white participants is neither as large nor statistically significant...
>
> The fact that the net effect of supplemental information for the white recipients reaches neither the magnitude nor the level of statistical significance that was found for Negroes may be explained by the greater access and exposure whites have to other sources of labor market information.[47]

Although the study may not have been of vocational education students the findings of the study should hold true, that people with labor market information knowledge can make better career choices because they are more informed. Therefore, student interest can be improved if their program choice is based on labor market knowledge, combined with an adequate number of program options.

Net training related job openings and training related placement rate, are most often used as planning tools, to plan vocational education programs to meet the expected future job openings. The tools can also be used for evaluation, to determine the success a program has had in matching graduates to job openings. If a program is producing graduates for occupations that have no openings, then the program may not be doing a good job of preparing students for the world-of-work.

One difficulty in using these tools, especially for planning purposes, is the validity of the job opening estimates. Due to smaller sample sizes, it is more difficult to estimate the occupational needs of a local area than a state or the nation. In estimating the net training related job openings of localities, consideration must be given to the fact that the smaller in population the locality is, the greater effect such actions as plant closings and openings have on the estimates.

To effectively use such estimates, the estimates must be used in conjunction with other contacts such as: local advisory committees, local offices of the state employment security bureau, surveys, both telephone and mail, and local economists and other employment related academic scholars. Further, the estimates only give the total openings, they do not tell the most effective way to train people for the openings. It may be more economically feasible for firms to utilize on-the-job training, or an apprenticeship program rather than have a vocational education program developed to train people for openings. As with the other tools, this tool should be used only as part of an evaluation package.

According to Young, et al., the meaning of **occupational criticality** can be summed up in the following question: "Is the program meeting a shortage of manpower essential for the welfare of the community?"[48] The following example from Young, et al., illustrates occupational criticality:

> If all the economists in the U.S. were to die today, it is very unlikely that the economy would suffer dire consequences. If all the tool and die makers were to drop dead simultaneously, the economy would grind to a halt in very short order.[49]

Occupations that are critical to the community still must be ones that justify the expense of vocational education training. If a community is critically short of retail store clerks, it may not be worth the cost of developing a vocational education program to train store clerks, particularly if the positions pay the minimum wage and offer no chance for advancement, no matter the severity of the shortage.

Potential mobility refers to the capability graduates of a vocational education program have to adapt to the changes that a dynamic economy requires. With changes in technology, today's jobs could be obsolete in a matter of a few short years. The mobility refers to geographic as well as occupational mobility. A program that develops graduates that are flexible and adaptable is one that develops mobility.

To best evaluate the success of a program in developing mobile graduates, surveys of graduates that detail: wage history, job satisfaction, and occupational history can help determine mobility.

Entry requirements refer to the education and training required to obtain a job. It can be difficult to establish the required education and training levels for an occupation for several reasons: regionality, education requirements may differ from region to region, depending on labor supply; lack of quantitative material that differentiates between the minimum education required for an occupation as opposed to the average education for people employed in that occupation and; the definition of the skills required and the tasks performed for a specific occupation may vary widely from employer to employer.

Still, through follow-up surveys of graduates, as well as surveys of the local businesses that could hire program graduates, a consensus of requirements can be developed for specific programs. There are also various publications from the U.S. Bureau of Labor Statistics, and state employment security bureaus that provide some insight into the entry requirements for specific occupations.

Effectiveness in serving the disadvantaged is essentially self-explanatory. How good are the vocational education programs at providing education and training for disadvantaged students? For a program to be successful serving disadvantaged students, access to all programs for all disadvantaged students that seek entry must be allowed, and there must be a strong understanding of the needs and requirements of the students. This understanding then must lead to the development of programs that allow the students to overcome their disadvantages, and enter the laborforce with strong, marketable skills.

To help determine how effective a program is in serving the disadvantaged, a combination of communication with current students and community representatives, from both business and the citizenry; and sophisticated follow-up surveys can be used.

Program cost, and benefit-cost analysis are evaluation criteria that have been implemented on an increasing basis over the last several years. There are many tools that can be used to evaluate program cost, including: benefit-cost analysis programs, such as those

discussed on page 22, net rate of return analysis, planning-programming-budgeting, and systems analysis, to name a few.

In these times of tight budgets, Young, et al. list 6 criteria to consider when deciding whether a training program should be in-school or on-the-job:

1. Is it awkward or expensive to provide competent instructional personnel at the typical worksite?

2. Might lack of training prior to assignment to the workplace risk the lives and safety of others?

3. Does the job require broad theoretical background understanding?

4. Would the on-the-job learning by one staff member greatly impede the productivity of others?

5. Would the duplication of the worksite- -in terms of equipment and other features- -in the classroom be prohibitively expensive?

6. Could the course be taught with substantially less expense on a cooperative basis to reap the benefits of the worksite experience and equipment as well as the formal institutional environment? Or possibly, would be possible to efficiently weld the virtues of institutional training with on-the-job instruction through cooper-ative work experience.[50]

The authors go on to say: "Costs of a vocational education program are important not because they should always be kept to a minimum but rather because it is important to know the least expensive means through which a specific goal may be achieved."[51]

With all of these criteria, it is important to remember that they are criteria, none should be used as the sole means of evaluating vocational education programs. They do however allow the observer to see how well vocational education does in meeting the demands of each of the criteria.

THE VALUE-ADDED APPROACH TO VOCATIONAL EDUCATION

A way to measure the effectiveness and efficiency of vocational education, that has recently received a great deal of attention, is the value-added approach. The term value-added originated in economics. According to Ekelund and Tollison, the term value-added in economics means: "The increase in the value or worth of a good at each stage of production."[52]

Businesses use the concept of value-added to help determine prices, as well as cost-effectiveness and efficiency of production. The value-added concept has also been used by the governments of several European nations through the use of a value-added tax, which taxes every increase in value achieved as a result of a step in the production of a good or service.

Regarding education, "Value-added is a term which stipulates the degree of improvement in the students' intellectual and personal development resulting from the university experience."[53] The value-added model of evaluation can be defined as: "...a data based system of test scores and questionnaire results which provide 'feedback' for monitoring student progress in achievement and public opinion."[54]

Various educational institutions began adapting the value-added concept for development into an evaluation tool in the 1970's. Northeast Missouri State University (NMSU) has emerged as one of the pioneers of the value-added approach to education. As with many innovative ideas, NMSU developed value-added to help solve a potentially severe problem, in their case, the problem was declining enrollments.

NMSU, in the early 1970's, was faced with estimated decline in enrollments of 40 percent. The university is a state university, located in a primarily rural area with a limited natural population base. Combining that with declines in college-age students, as a result of the end of the baby-boom era, the future looked bleak. To ensure the survival of NMSU, a method to stabilize and increase enrollments had to be found. NMSU, rather than lower admission and academic standards or do nothing, decided to raise admission and academic standards to attract a different type of student than was currently attracted to NMSU.

To measure the success in raising academic standards, NMSU developed a system of tests and surveys. The tests were used to measure the academic growth of the students throughout their academic career at NMSU. The surveys were designed to determine

the general impression of the university held by incoming students, current students and alumni.[55]

Te plan worked. NMSU had an enrollment of approximately 5,000 students in the early 1970's, and expected enrollment to drop to under 3,000 students, but had over 6,500 students enrolled in 1985. Additionally, the class entering NMSU in the fall of 1985 had the highest high school class rankings and American College Testing Freshman College Entrance Exam (ACT) scores of any previous class.[56]

The use of the tests and surveys to measure students progress and attitudes eventually became known as the value-added approach. By implementing the value-added approach, the user makes three major assumptions:

1. That meaningful characteristics of students can be measured;

2. That both the nature and the magnitude of change in these characteristics can be assessed;

3. That such change can be attributed to specific educational interventions.[57]

The task of developing a value-added system can be somewhat daunting. As described by Hanson:

> Assessing value added is a process that occurs over time; assessing when and how students change, and linking such change to specific educational interventions, is a complex and difficult task that requires new strategies for conceptualizing issues, building new and different assessment instruments, and designing research with different purposes and outcomes than those found in many traditional methods of inquiry.[58]

The value-added approach meets several needs of educators trying to evaluate a program.

1. Knowing the results of the teacher-learning process, other than through course grades;

2. Developing a system for determining to what extent students are benefiting from training experiences;

3. Providing information on the student's growth and development;

4. Producing graduates who are trained, educated, and competent in their fields; and

5. Focusing on quality rather than quantity as a measurement of institutional success.[59]

The implementation of the value-added approach requires repeated testing and surveying, a time-consuming and relatively expensive evaluation approach. Using the NMSU approach as an example, half of the freshman class is given the ACT College Outcomes Measures Project (COMP), all sophomores are given the COMP exam and the ACT Residual Exam, and all seniors must take senior examinations in their specific field. Senior exam instruments include the National Teacher Examination, Undergraduate Assessment Program business tests, Graduate Record Examinations, Teacher Education Examination Program, the Undergraduate Program for Counseling and Evaluation, and the American Institute of Public Accountant's College Accounting Program examination. Additionally, one-fourth of all graduating students are given the COMP test.[60]

There are also five different questionnaires that are used by NMSU to survey the attitudes and opinions of: freshmen, currently enrolled students, seniors, alumni, and employers. Some of the surveys were developed by NMSU, others were national surveys, and still others were modified from national surveys to fit specific needs of NMSU.

The information gathered as a result of the tests and surveys are then tabulated and made available for administrative use for varying periods of up to eight years. This system, while effective in quantifying the "value added" to the student by the program, is costly, and indeed may be too costly for some schools.

Incorporating the value-added approach into a vocational education setting is something that has not yet occurred on a large scale. One primary reason for this is the limited number of standardized tests available to measure the skill and knowledge growth of students. Without the standardized tests, tests must be developed and tested for accuracy by the organization that wishes to do the evaluation. This process is very time-consuming and expensive, and there is a very limited body of test takers to use for measurement and comparison purposes.

Also, the program that adopts the value-added approach must be sophisticated in the art of test and survey developing and administering. The administrators must also have an adequate system of saving, tabulating, correlating, and analyzing the results of the surveys. Many programs do not have administrators

with adequate knowledge and abilities to perform the many duties required.

If implemented in a vocational education setting, the value-added approach should not only demonstrate increased knowledge and skills, but also the amount of increase for which vocational education is responsible, as opposed to general education. If the amount of knowledge and skill gain attained from vocational education and from general education cannot be separated, proving the value of vocational education will be more difficult. Since vocational education programs are more expensive than general education programs, they require stronger proof as to their value.

Not everyone is enamored with the value-added approach for education evaluation. A common criticism of value-added is that it does not help educators learn anything that they did not already know or believe. Constance Smith, in a criticism of value-added states:

> The only things we can measure from a value-added standpoint are those quantifiable factors which we *already* believe relate to educational success.[61]

Another worry cited by Smith is that teachers may start teaching for the test, rather than teaching the subject.

> ...I am worried about teaching for the test. The old performance contracting experiments in public elementary and secondary schools clearly indicated that paying teachers according to student achievement produced teachers who concentrated on teaching (a) material which was likely to be on the achievement test and (b) test taking skills. The outcome was students who were well trained to take standardized tests. These students may or may not have been well educated.[62]

A further concern lies with the fact that the main axiom of value-added is that "true quality resides in the ability of an institution to make a positive difference in the personal and intellectual development of its members."[63] As a result, the focus is geared exclusively towards results, with little or no attention paid to the program methodology. In that sense, the value-added approach adopts the old adage, the end justifies the means, by gearing exclusively towards results and methodology is only examined if the results are not satisfactory.

COMPETENCY-BASED VOCATIONAL EDUCATION AND OTHER EVALUATION APPROACHES

Many ideas regarding the value-added approach to vocational education evaluation are also included in the competency-based approach to vocational education. The competency-based vocational education **(CBVE)** approach is defined by the Maryland State Department of Education as:

> an instructional process aimed at improving the teaching-learning process. ...CBVE refers to occupational programs in which required behaviors (competencies) and performance standards are specified in advance of instruction. ...the basic intent of CBVE is to aid student achievement of required behaviors or competencies needed for successful on-the-job performance.[64]

Both value-added and CBVE are aimed at increasing the quality of the graduates of a program. Both also measure the student at a iven point. The difference between the programs is that value-added measures all students at the same time, with the knowledge and/or ability level differing; and CBVE uses the knowledge and/or ability level as a constant, the variable being the amount of time the student needs to reach the required level of competency. As a result CBVE requires individualized instruction, since each student is working at his/her own pace to reach the required competency level and/or performance level.

CBVE bases specific performance objectives on three criteria:

1. What a learner must do,
2. Under what conditions, and
3. With what degree of skill.

"A student who wants to reach a certain skill level must develop two things: speed and accuracy."[65]

The primary difficulty of CBVE is the same as for value-added. The amount of time required to develop the program is significant. CBVE requires complete support from all parties involved, as well as input from community and business leaders to determine the desired competencies.

Another evaluation method is called Training Value Analysis **(TVA)**. TVA was developed in the private sector as a response to the demand for more cost-effective training systems. Fitz-enz, in the article "Proving the Value of Training" states that:

> In order for training and development to survive and grow, it must demonstrate that an expenditure for training is not a cost but a sound business investment. Trainers should begin by viewing their function as one that does more than just increase skills, impart knowledge, or foster a change in attitudes; they must prove that people use the skills, knowledge, or attitudes to upgrade their job performance. Further they should be able to show that the higher level of performance leads to an increase in revenues, a decrease in expenses, organization's financial or productivity improvements with the costs of its training programs, trainers can show that they *do* add value."[66]

TVA, as well as other cost-benefit systems, helps with decisions regarding the value and benefit of programs, but can do the analysis more quickly than a standard evaluation plan. Fitz-enz, in discussing the value of TVA states:

> Procedures such as TVA not only help you make decisions about the value of your programs but also help you do the job faster, modify programs to increase value, eliminate programs that don't pay off, and generally improve the Return on Investment (ROI) of both the training function and the organization that it serves.[67]

TVA's premise is similar to value-added's, namely: "there is a positive difference between (1) the cost or investment and (2) the benefit or return on that investment.[68] Implementation of TVA involves cost management and value management, to determine the value over cost of training. The following table compares and contrasts the standard approach for evaluating training to TVA.

Comparison of Standard and Training Value Analysis (TVA) Methods of Analyzing Training

	Standard Method		TVA Method
1.	Identify a need-e.g., poor supervisory practices.	1.	Identify the need as specifically as possible.
2.	Decide on a general solution-e.g., supervisory skills program.	2.	Decide on a solution-e.g., a set of visible skills.
3.	Design the program.	3.	Assemble trainer/manager group.
4.	Pilot-test the program.	4.	Describe the skill outcomes expected from the training.
5.	Modify the program accordingly.	5.	Teach the group the TVA process.
6.	Conduct the program.	6.	Conduct the analysis and modify program outcomes (on the spot, if necessary) to achieve an acceptable return on investment.
7.	Look for evidence, usually subjective, to describe the benefits of the training.	7.	Conduct the program and record the actual objective values obtained in comparison to the predicted values.[69]

Although this plan was designed for the private sector, it could be incorporated for use in vocational education. Training programs, both private and public, must continue to prove that they are cost-effective and efficient.

VOCATIONAL EDUCATION AND ECONOMIC DEVELOPMENT

One way that vocational education can improve its economic value to the students, community, business, and government is to increase its role in economic development. Vocational education administrators must be more adaptable to meet the needs of today and anticipate the needs of tomorrow. To do so, vocational education administrators must:

1. Begin focusing on retraining and upgrading skills of the current workforce;

2. Increase communication with employers:

   A. to ensure that the programs are current with technology,

   B. so that the programs are producing graduates that are trained to perform jobs that are in demand,

   C. and to convince employers that using the facilities of vocational education (physical and staff) is a cost-effective and efficient way to provide additional training for their workers;

3. Focus on recruiting and training dropouts, displaced workers and the disadvantaged; and

4. Work with government leaders, at both the state and local levels, to become involved with economic development plans, through offering training facilities and services to new companies attracted to an area, as well as existing companies that wish to expand or are contemplating leaving a community.

Additionally, vocational education must promote itself, letting students, communities, businesses and government know its contributions to society. Vocational education helps provide a stronger workforce and has trainers and facilities ready to assist employers with their training and retraining needs.

Vocational education must emphasize its strong points, illustrate the economic and social benefits that studies have illustrated:

1. Secondary vocational education graduates have lower unemployment rates than non-vocational students (Oregon Department of Education, 1978; Fetters, 1975; and Creech, 1976);

2. The majority of vocational education graduates find employment in their field of study (Tabler, 1976; Eninger, 1972; Shymoniak, 1972; Campbell, et al., 1982; and Daymont and Rumberger, 1982);

3. Postsecondary vocational education graduates earn more than postsecondary general education graduates (Robon, 1977; and Schriver and Bowlby, 1971);

4. Vocational education graduates are more satisfied with their jobs than nonvocational graduates (Burgess, 1979; Von Stroh, 1968; Katz, et al., 1974; and Conroy and Diamond, 1976); and

5. Employers prefer vocational education graduates to nonvocational graduates, especially postsecondary vocational education graduates (U.S. Chamber of Commerce survey, 1981; National Association of Manufacturers survey, 1982; and Iowa Department of Public Instruction, 1977).[70]

Vocational education provides graduates who are more work-ready than general education graduates. Vocational education program graduates have a familiarity with the job, its skill requirements, and the equipment necessary to perform the job. As a result, the vocational education graduate should require less time for acclimation and on-the-job training. This in turn allows the worker to become productive more quickly than a nonvocational graduate.

Vocational education programs also offer many societal benefits. Through programs authorized under the Carl D. Perkins Vocational Education Act, Job Training Partnership Act, as well as various programs for the disadvantaged, people who are receiving subsistence payments or underemployed are able to receive training to better their lives. With fewer new workers entering the workforce today, and with added pressure to reduce taxes, any

system that is able to train productive workers is contributing social and economic benefits.

Additionally, a well-trained and educated workforce will attract new businesses and allow present businesses the opportunity to expand, due to the fact that a well-trained workforce will increase production and be more efficient, two strong incentives for employers. The increase in business will also increase the revenue base, without having to raise taxes.

SUMMARY AND CONCLUSIONS

What is the economic justification for vocational education? Why should our tax dollars support vocational education? What's in it for me? The final question seems to be the bottom line for many people. The answer is that there is a great deal in it for you, no matter who you are.

Vocational education offers virtually anyone the opportunity to be trained for a particular line of work. Vocational education offers education and training opportunities in many fields; traditional ones such as agriculture, and manufacturing; as well as newer ones such as medicine, culinary services, and many business occupations.

The supply of trained graduates obviously is beneficial to employers. With skilled people to hire, the amount of in-house and on-the-job training needed should be less than for nonvocational new hires with the same amount of education. With a more skilled workforce, the community benefits because firms needing skilled workers are more apt to locate in the community, bringing better jobs, better in both working conditions and wages. In turn, more and better jobs helps a community to meet the service demands of its citizens.

In a perfect world, Catterall's "economic promise of vocational education," would be the norm. Vocational education would be able to have only positive impacts on students, as well as society. But it is not a perfect world, and vocational education has not had the positive impact that its promise would indicate.

Employers complain that the students, both vocational and nonvocational do not have the necessary basic skills and understanding to be productive in the world-of-work. Employers are looking for workers that:

1. Are striving to work well,
2. Know how to learn,
3. Are able to set priorities,
4. Have the ability to communicate well, and
5. Have problem-solving skills.[71]

Vocational education programs must be designed to meet the needs of the employers. As a result basic skills studies must be added to the curriculum.

Also, in times of tight budgets, vocational education programs must attempt to find the most economical and efficient way to provide education and training to its students. Inefficient programs must be evaluated and reorganized or eliminated. Waste must be cut to an absolute minimum.

Vocational education is economically justifiable. It offers many economic and social goods to everyone it serves. So, what's in it for you? Depending on who you are, either a better job, a better employee, or a better community. In any scenario, a better life, and that is certainly something anyone can justify economically.

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